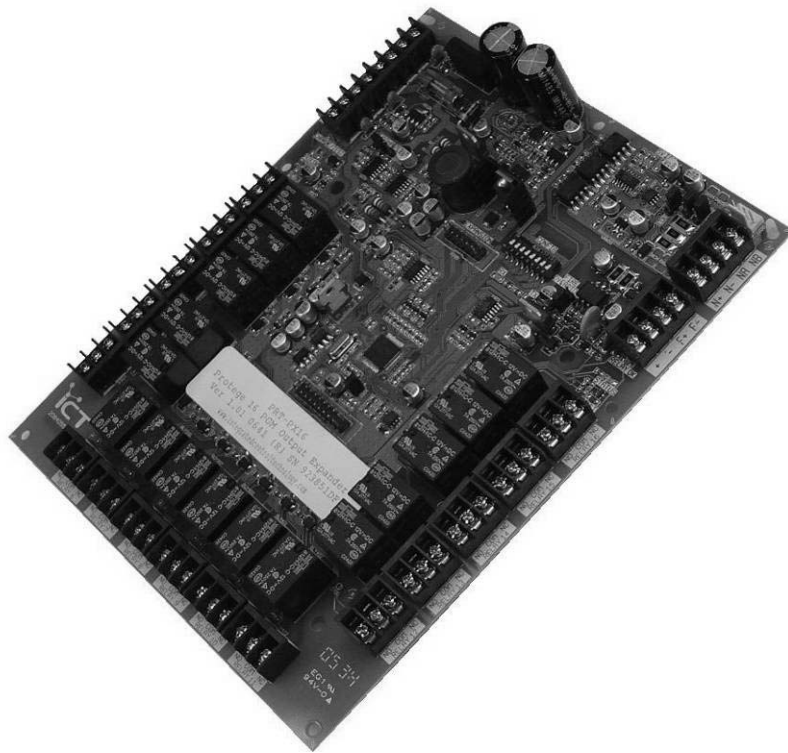




PRT-PX16

16 PGM Output Expander



Installation Manual

CONTENTS

Protégé System	3
Introduction	3
PGM Expander	3
Features	3
PGM Expander Specifications	3
Protégé System Management Suite	5
Protégé Modules	5
Installation	7
Package Contents	7
Location and Mounting	7
Cabinet Tamper Switch	7
Earth Ground Connection	8
AC Power	8
Backup Battery	9
Status Indicator Output	10
Encrypted Module Network	10
Slave Device Network	12
RS485 Biasing	13
Fire Control Input	14
Fire Control Override	14
Zone Inputs	16
Introduction	16
Trouble Zone Inputs	16
Programmable Outputs	17
Introduction	17
PGM Relay Outputs	17
Elevator Floor Relay Connections	18
Introduction	18
Fail Safe Wiring	18
Fail Secure Wiring	19
Fail Safe Destination Reporting Wiring	19
Fail Secure Destination Reporting Wiring	20
Communication Failure Floor Operation	21
Testing Destination Reporting Interface	22
Configuration Switch	23
Introduction	23
Address Configuration	23
Elevator Floor Address Configuration	24

Status Indication	26
Introduction	26
Status Indicator	26
Fault Indicator	26
Charge/Test Indicator	26
Auxiliary OK Indicator	26
AC OK Indicator	26
5V Isolated Power Indicator	27
Relay Voltage Status	27
Network RX/TX Indicator	27
Error Code Indication	28
Introduction	28
Error Code Indication	28
Ordering Information	29
Product Codes	29
Disclaimer	30
Introduction	30
Disclaimer Notice	30
Warranty	31
Introduction	31
Contact	31

PROTÉGÉ SYSTEM

Introduction

The Protégé System is a powerful integrated alarm and access control management system designed to provide integration with building automation, apartment complex control and HVAC in one flexible package. Communicating through a proprietary high speed protocol across an encrypted RS-485 network using modular-based hardware design, system installers have the flexibility to accommodate any installation from small or large, residential or commercial.

PGM Expander

The PRT-PX16 Protégé PGM Expander extends the number of PGM outputs by 16. All 16 PGM Outputs feature 7A FORM C High Current Relays with fire control and power supply cut off integrated.

Flexible module network architecture allows large numbers of modules to be connected to the RS-485 Module Network. Up to 250 modules can be connected to the Protégé System in any combination to the network up to a distance of 900M (3000ft). Communication beyond this distance requires the use of a RS-485 Network Extender.

A true multiple function module the PRT-PX16 Protégé PGM Expander can be connected to the slave communication RS-485 interface of any PRT-RDI2 or PRT-RDE2 Reader Expansion Module for simple cost effect integrated elevator floor control with local autonomous operation.

Locking a network prevents the removal, substitution or addition of modules to the module network effectively preventing any tampering with the system.

Features

- Secure Encrypted RS-485 Module Communications
- 16 High Current FORM C PGM Outputs
- 1 Open Collector Status Output
- 1.5A Switching Power Supply
- Intelligent Battery Charge and Monitoring
- Online and Remote upgradeable firmware
- Optically Isolated Fire Control Input For Elevator Systems

PGM Expander Specifications



The following specifications are important and vital to the correct operation of the PRT-PX16 Protégé 16 PGM Output Expander. Failure to adhere to the specifications will result in any warranty or guarantee that was provided becoming null and void.

Integrated Control Technology continually strives to increase the performance of its products and as a result the specifications may change without notice. It is recommended that you

always consult www.integratedcontroltechnology.com for the latest documentation and product information.

Power Supply

AC Input Voltage	16VAC @ 40VA (Max)
Operating Current	280mA (Typical) ~1.2A (Max) (All Relays Activated)
DC Output (Auxiliary)	200mA (Max)
Battery Charging	350mA/700mA
Battery Low	10.5VDC
Battery Restore	11.5VDC

Communication

RS485	Isolated Module Network
-------	-------------------------

Outputs

16 Relay Form 'C'	7A, 250V (Max) Non Inductive Loads Only
Status Output	50mA (Max) Open Collector

Inputs

Tamper	Normally Closed
Fire Control	12-32VDC (6-21mA) Voltage Input
Button Inputs (Optional)	16 (Requires PRT-PX16-DRI Interface)

Dimensions

PCB Dimensions	183mm X 234mm 7.2" X 9.2"
Enclosure	330mm X 406mm X 89mm 13" X 16" X 3.5"

Temperature

Operating	5° - 55° Celsius 41° - 131° Fahrenheit
Humidity	0%-85% (Non-Condensing)
Storage	-10° - 85° Celsius 14° - 185° Fahrenheit
Humidity	0%-85% (Non-Condensing)

Miscellaneous

Destination Reporting	Yes (Optional Input Unit)
Fail Safe Operation	Yes (Configurable Option)



It is important that the unit is installed in a dry cool location that is not affected by humidity. Do not locate the unit in air conditioning or a boiler room that can exceed the temperature or humidity specifications.



The isolated communications interface on the Protege PGM Expander uses full galvanic isolation to prevent ground loop noise and cross phase ground differential. This is a very important feature of the product family and the correct connection of power to this isolated section will ensure the correct operation of the communications network. Failure to apply power to the communication interface will prevent the operation of the communication interface.

Protégé System Management Suite

The Protégé System Management Suite is a Windows 2000/XP Professional Integrated Access Control and Alarm Management system designed for any configuration from single site, single controller applications up to the global multi-national corporations using multiple site, multiple controller installations.

The Protégé System Management Suite application is ideal for the configuration and management of your Protégé installation. Special built in features and the quick-start kit will get your system up and running in minutes.

Protégé Modules

The Protégé System can be expanded to accommodate large numbers of modules using the encrypted RS-485 network. Modules that are currently available are listed below. Visit the Integrated Control Technology website www.integratedcontroltechnology.com for the latest Protégé module and product information.

Alphanumeric LCD User Interface (PRT-KLCD)

The Protégé LCD User Interface Keypad is the interface between the user and the Protégé System. All programming and end user functions can be performed using the LCD Keypad. The 32 character alphanumeric display uses easy to read messages and menus to guide users through the systems operation. The LCD Keypad also adds two zones (four zones in multiple zone configuration) and one PGM to the Protégé System.

16 Zone Expansion Module (PRT-ZX16)

Extends the Protégé System with the addition of 16 Zones and 4 Programmable Outputs (PGM's). Operates from 16VAC with onboard power supply and isolated communication interface.

16 Zone Standard Expansion Module (PRT-ZXS16)

Extends the Protégé System with the addition of 16 Zones and 1 Programmable Output (PGM). Operates from 12VDC network connection. No onboard power supply.

16 PGM Expansion Module (PRT-PX16)

Extends the Protégé System with the addition of 16 Programmable Outputs (PGM's) (16 7A FORM C Relays). The PRT-PX16 can be connected to the slave communications interface of the PRT-RDI2 2 Reader Expansion Module for FULL monitored elevator control with the addition of the PRT-DRI Destination Reporting Interface Optical Input Module.

16 PGM Standard Expansion Module (PRT-PXS16)

Extends the Protégé System with the addition of 16 Programmable Outputs (PGM's) (16 20mA Open Collector Outputs). Operates from 12VDC network connection. No onboard power supply.

Ethernet Intelligent 2 Reader Expansion Module (PRT-RDE2)

Communicating over a high speed interface using 10/100 Ethernet, interface connection for two card readers, either Wiegand or Magnetic Stripe formats. Four Wiegand Card Readers can be connected in Multiple Card mode. The 2 Reader Ethernet Expansion Module also adds 8 Zones and 8 Outputs to the Protégé System. Some of

the outputs on the PRT-RDE2 have specific access control functions and can be used as zones in the Protégé alarm processing functions.

Intelligent 2 Reader Expansion Module (PRT-RDI2)

Adds the interface connection for two card readers, either Wiegand or Magnetic Stripe formats. Four Wiegand Card Readers can be connected in Multiple Card mode. The 2 Reader Expansion Modules also adds 8 Zones and 8 Outputs to the Protégé System. Some of the outputs on the PRT-RDI2 have specific access control functions and can be used as zones in the Protégé alarm processing functions.

Mini 2 Reader Expansion Module (PRT-RDM2)

Adds the interface connection for two card readers, either Wiegand or Magnetic Stripe formats. Four Wiegand Card Readers can be connected in Multiple Card mode. The 2 Reader Expansion Modules also adds 6 Zones and 8 Outputs to the Protégé System. Some of the outputs on the PRT-RDM2 have specific access control functions and can be used as zones in the Protégé alarm processing functions.

Analog 4 Channel Input Expansion Module (PRT-ADC4)

Protégé allows the connection of the latest building automation technology and completely integrated building automation solutions. Adds 4 Analog Inputs (4-20mA or 0-10V) allowing the connection of numerous industrial automation sensors. The Analog Input Expansion Modules also adds 4 PGM Outputs to the Protégé System.

Analog 4 Channel Output Expansion Module (PRT-DAC4)

Protégé allows the connection of the latest building automation technology and completely integrated building automation solutions. Adds 4 Analog Outputs (4-20mA or 0-10V) allowing the connection of numerous industrial automation outputs including air damper and sun louver controls as well as analog flow valves. The Analog Output Expansion Modules also adds 4 PGM Outputs to the Protégé System.

INSTALLATION

Package Contents

When receiving the PRT-RDI2 Protege PGM Expander you should find the kit contains the items listed below. The kit type is clearly labelled on the packaging and will tell you what your kit contains. Please note that if you do not have the correct contents contact your distributor immediately.

PRT-PX16-PCB

Contents:

Protégé 16 PGM Output Expander PCB Only

PGM Output Expander Printed Circuit Board

6 X Plastic Mounting Standoffs

Red/Black Backup Battery Wires

Location and Mounting

The Protege PGM Expander is available as a PCB Only (Printed Circuit Board) or complete unit supplied with a metal cabinet. It is recommended that the cabinet provided be used where possible, as this provides the best mounting and installation solution as well as the required cable entry and termination space.

When installing the Protege PGM Expander ensure that there is adequate clearance around all sides of the enclosure and air flow to the vents of the enclosure are not restricted.

It is recommended to install the Protege PGM Expander in a location that will facilitate easy access for wiring. It is also recommended that the Protege PGM Expander is installed in electrical rooms, communication equipment rooms, closets or in an accessible area of the ceiling.

1. Insert the plastic stand-offs in to the locations to mount the PCB board.
2. Calculate the location and position of the enclosure and mark the holes for the keyhole points in the top left and right locations. This will allow you to screw in the screws and then hang the box on them adjusting the location to suit.
3. Ensure a solid fixing point and screw in the two screws. Before tightening the top screws insert the tamper bracket in the slot provided on the right side of the enclosure.
4. Fix the enclosure securely using the remaining mounting holes on the bottom left, right and centre of the enclosure.
5. Insert the PCB in to the enclosure and mount using the plastic standoffs inserted during step one.



Install the enclosure when the circuit board is NOT installed on the plastic stand-offs. This will reduce the risk of damage caused by debris during the installation process.

Cabinet Tamper Switch

The enclosure tamper input signals to the monitoring station or remote computer that the PGM Expander enclosure has been opened. The tamper input switch should be mounted into

the steel bracket provided and connected to the tamper connection terminals as shown in the diagram below. The tamper input opens and closes trouble zone PXxxx:01 on the PGM expander.

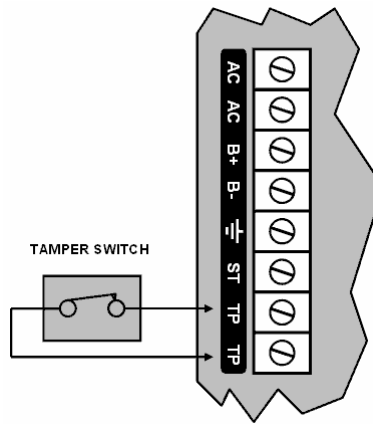


Figure 1 - Tamper Input

Earth Ground Connection

The Protege PGM Expander has a connection for earth ground. For best results a cold water pipe should be used with a pipe wiring clamp. If a cold water pipe is not available connect to a suitable ground connection in the installation.

A minimum 14AWG solid copper wire should be used from the Protégé 16 PGM Expander's earth connection point to the clamp on the cold water pipe. If other earth clamps are present at the same connection point connect the clamp below the existing units.

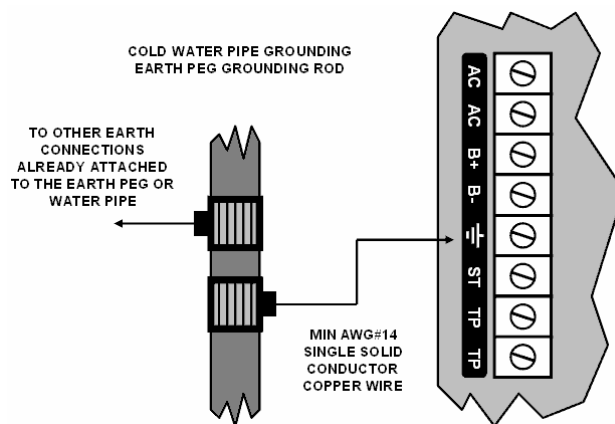


Figure 2 - PGM Expander Main Earth Ground Connections

AC Power

The Protege PGM Expander should be supplied by a dedicated electrical power source rated for a minimum 10Amp Load and have a dedicated circuit breaker. Do not use a switch controlled breaker or a switched electrical point to supply electrical power. Connect the

primary of a 16.5VAC, 50/60Hz, 40VA Transformer to the electrical circuit and run the secondary to the AC input on the controller terminals.

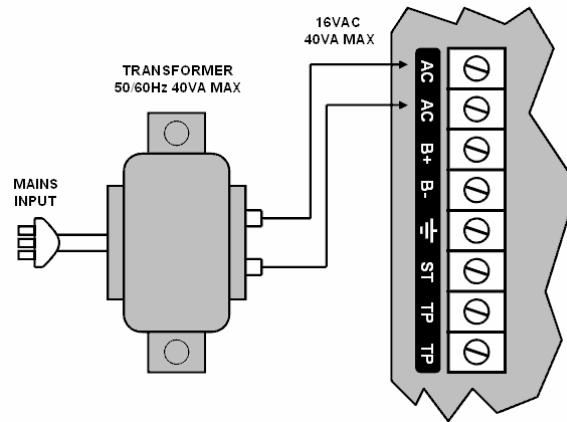


Figure 3 - AC Transformer 16VAC, 50/60Hz, 40VA MAX

Specific regional regulations may allow the transformer to be mounted inside the enclosure. In this case wire the electrical circuit to the electrical termination point inside the enclosure and the secondary wires of the transformer to the AC Input on the controller.



Termination of wiring to the Protégé PGM Expander while power is applied or the battery is connected may cause serious damage to the Protégé PGM Expander and will VOID ALL WARRANTIES OR GUARANTEES. Power the Protégé PGM Expander ONLY after all wiring, configuration and jumper settings are completed.

Backup Battery

It is recommended that a minimum of a 4Ah battery is used as the main backup battery. From the accessory bag provided, connect the RED and BLACK battery termination wires to the B+ and B- terminals. Connect the spade terminals to the battery as shown below. Connection of the battery in reverse will not damage the PGM Expander but will cause the battery fuse (5A Fast Blow) to blow and require replacement.

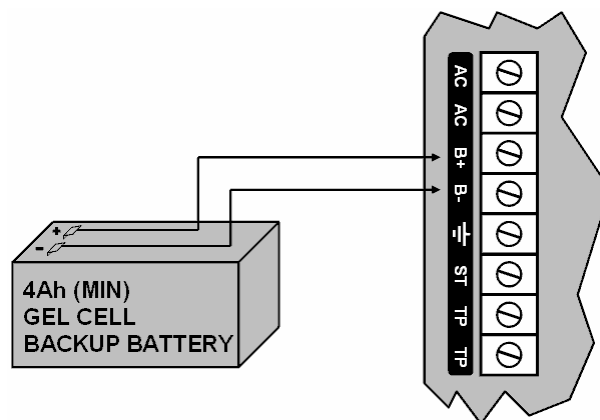


Figure 4 - Battery Connection

The battery test procedure uses a special algorithm to prevent deep discharge and increase battery endurance. A dynamic battery test is performed every ten minutes when AC power is present and a battery condition alarm will be generated if the battery is either disconnected or shows poor capacity. Battery fault conditions will activate the battery trouble zone associated with the address assigned to the PGM expander.

If AC is not present the Protege PGM Expander will monitor the battery for a low voltage level and will activate the battery trouble zone. The next dynamic battery test will occur 30 minutes after AC power has been restored. This delay allows the battery to achieve optimal charging during the first 30 minutes when power is initially restored to the unit. Once the first test is completed the dynamic battery testing will return to 10 minute intervals.

When power is first applied to the Protege PGM Expander a dynamic battery test will be performed after 30 seconds, this allows the status and condition of the battery to be detected. On completion of this first test the normal testing period of 10 minutes will be resumed.

Status Indicator

The status output will activate according to the status indicator on the Protege PGM Expander and can be used to provide signalling or indication of the PGM Expander status outside the enclosure. The following diagrams show the connection of an LED indicator to the status output.

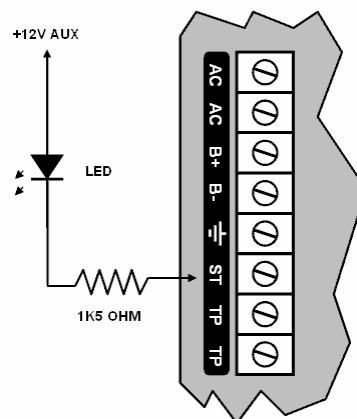


Figure 5 - External Status LED Connection



Encrypted Module Network

The Protege PGM Expander incorporates encrypted RS-485 communications technology. The isolated communications interface offers full galvanic isolation to prevent ground loop noise and cross phase ground differential between network devices.



Always connect the PGM Expanders NA and NB terminals to the NA and NB terminals of the communication network. The N+ and N- must go to a 12V power supply source as shown in the following diagram and connected at ONLY one +12V power source.



-  The 12V N+ and N- Communication input must be supplied from only ONE point. Connections from more than one 12V supply may cause failure or damage to the PGM Expander or device supplying network power.
 -  The EOL (End Of Line) jumper setting **MUST** be set in the ON position for the LAST module on the RS485 network. EOL is ON when the jumper is closest to the EOL text.

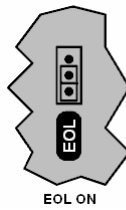


Figure 8 - EOL Jumper ON

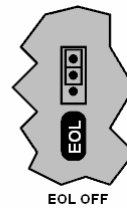


Figure 9 - EOL Jumper OFF

Slave Device Network

The Protégé PGM Expander can be connected in Elevator Control Mode (see configuration section) to allow floor control of elevators using the RDI2 and PX16 modules.

Connection of the communications should be performed according to the following diagram. It is important that the S+ Slave Communications Power be supplied from an either independent battery backed power supply unit or a module connected to the slave communication interface capable of supplying the required voltage to all devices on the slave RS485 network.

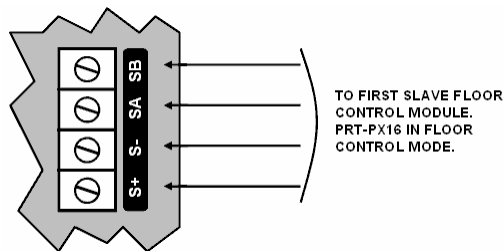


Figure 10 - Slave Communications Connection



When the Protégé 16 PGM Output Expander is operating in Elevator Mode the configuration switch settings need to be set to the correct mode and address. This should be done BEFORE connecting and powering the unit.

Always connect the PRT-RDI2 or PRT-RDE2 Reader Expanders SA and SB terminals to the NA and NB terminals of the slave 16 PGM Output Expanders. The S+ and S- must go to a 12V power supply source as shown in the following diagram.

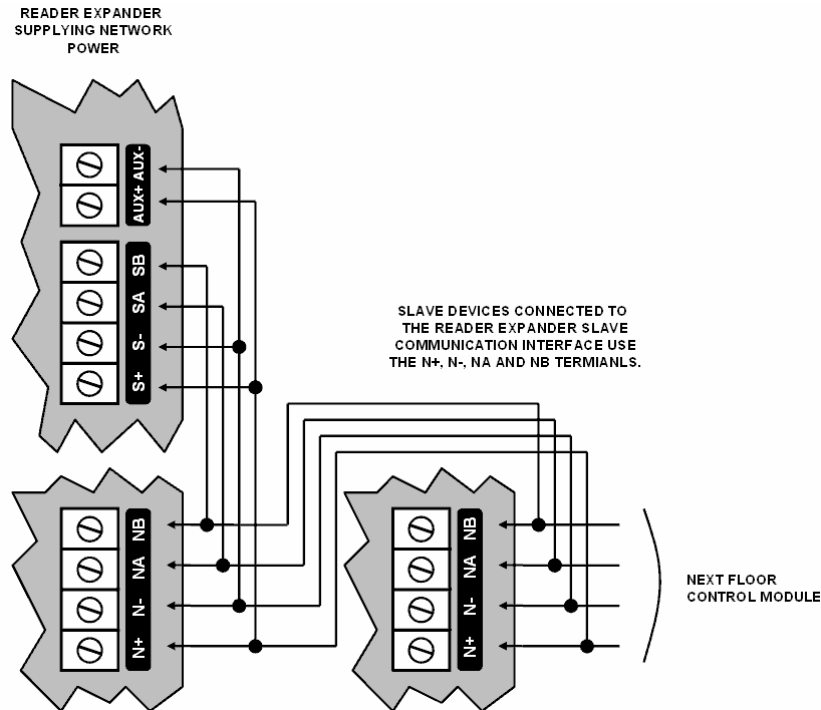


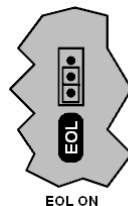
Figure 11 - Slave Power Supplied By Module



The 12V S+ and S- Communication input must be supplied from only ONE point. Connections from more than one 12V supply may cause failure or damage to the reader expander or device supplying slave communication power.



The EOL (End Of Line) jumper setting **MUST** be set in the ON position for the LAST slave module on the RS485 network. EOL is ON when the jumper is closest to the EOL text.



EOL ON



EOL OFF

Figure 12 - EOL Jumper ON

Figure 13 - EOL Jumper OFF

RS-485 Biasing Settings

The Protégé 16 PGM Expander has biasing settings for the network communication port. Biasing can be configured for either high or low (L indicates a low bias and H indicates high bias configuration). Both jumpers **MUST** be set to the same bias type.

In most cases the Biasing will be on either the controller or the reader expander when in elevator mode. In normal operation the biasing must be set to no biasing (Jumper removed or in the middle).

- ❗ **Biasing should only be set to LOW on ONE point on any single segment of the RS-485 network. All other devices on the same segment should be set to the middle position which is no biasing.**
- ❓ **The PRT-CTRL System Controller by default has the jumpers for the biasing set to low and the EOL jumper on. This is also the same default configuration for the slave communication port on the PRT-RDI2 and PRT-RDE2 Protégé Intelligent Reader Expanders.**

Fire Control Input

The fire control input is an optically isolated input that allows the output relays of the Protege PGM Expander to be deactivated in the case of an emergency. This input must be activated by a voltage from 12-32VDC and it is recommended that it is isolated from the access control system.

The Protege PGM Expander is designed for simple fire control connection and this allows all of the Fire Control terminals to be connected in parallel reducing the need for external relays at each unit.

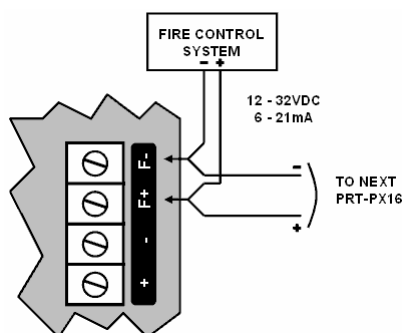


Figure 14 - Fire Control Input Connection

- ❗ **The relays of the Protégé PGM Expander WILL NOT activate unless there is a voltage supplied to these terminals. To check if the relay voltage is activated ensure the RELAY OK LED indicator is illuminated. The LED is located on the right side of the PGM Expander circuit board.**
- ❗ **Fire Control can be overridden using the Fire Control override configuration jumper. By default this jumper is shipped in the disabled position requiring the installer to enable the override option or power the F+ and F- fire control inputs.**

Fire Control Override

A fire control override configuration option is provided on the Protege PGM Expander to disable the Fire Control Input when it is not being used. Using this configuration jumper a wire loop is not required from the + and - terminals to the F+ and F- input terminals. By default the fire control override option is disabled.



Figure 15 - Fire Control Override Disabled (Default)



Figure 16 - Fire Control Override Enabled

ZONE INPUTS

Introduction

The Protege PGM Expander has no physical zone input connections. The PGM expander monitors 8 trouble zones used to report trouble conditions. A trouble zone is in most cases not physically connected with an input in to the PGM Expander; rather it is related to a status condition within the system. For example a module communication fault causes a trouble zone to open as a result of the communication failure.

Trouble Zone Inputs

Each PGM expander can monitor up to 8 trouble zones. Trouble zones are used to monitor the status of the PGM expander and in most cases are not physically connected to an external zone input. For example, trouble zone PX001:04 is used to monitor the auxiliary voltage output and will generate an alarm if the auxiliary fails.

The following table details the trouble zones that are configured in the system and the trouble type and group that they activate.

Zone Number	Description	Type	Group
PXxxx:01	Module Tamper	System Tamper	System
PXxxx:02	AC failure	Power Fault	General
PXxxx:03	Low Battery	Power Fault	General
PXxxx:04	Aux Failure	Power Fault	General
PXxxx:05	Fire Control	Power Fault	General
PXxxx:06	Reserved	None	None
PXxxx:07	Reserved	None	None
PXxxx:08	Module Offline	Module Offline	System

Replace the 'xxx' with the appropriate address of the PGM expander that you are programming.

PROGRAMMABLE OUTPUTS

Introduction

The Protege PGM Expander has 16 Programmable Outputs (PGM's). The PGM's are used to activate Bell Sirens, Lighting Control and Automation Points. A full FORM C relay output the units are ideal for the interface to building automation and control.

PGM Outputs (1 to 16)

The 16 PGM Outputs each have a FORM C output relay and an indicator showing the relay status. The connection example below shows the control of an external LED indicator from the auxiliary supply of the 16 PGM Output Expander.

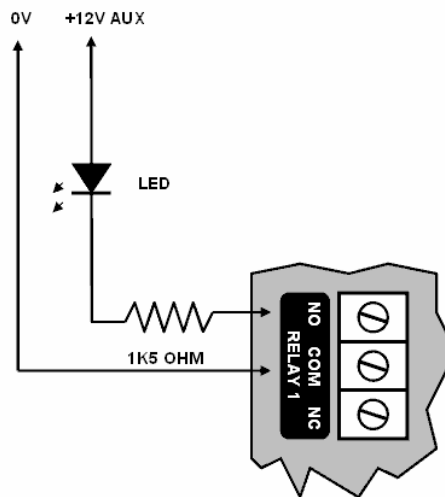


Figure 17 – Example PGM Connection (PGM 1 Shown)



Switching inductive loads that can produce high back EMF voltages or large voltage induced spikes can cause the 16 PGM Output Expander to behave unexpectedly and should be avoided. A suitable isolation circuit must be installed between the relay contacts of the 16 PGM Output Expander and the inductive load.

ELEVATOR FLOOR RELAY CONNECTIONS

Introduction

When using the Protégé 16 PGM Output Expander as an elevator floor controller the relays can be connected in either a normally open connection (fail secure) or a normally closed connection (fail safe). It is recommended that the relays be connected in the fail safe operation and is mandatory if the installation is to comply with UL specifications.

Fire Control operation will NOT operate when being used in a fail secure mode of operation and it is therefore not recommended.



You must still supply a voltage to the fire control input to allow the floor control relays to activate during normal operation. Refer to Fire Control Input Section Page 14.

Fail Safe Wiring

The fail safe wiring connection is the most common interface method. By interfacing the floors that require security to the normally closed connection of the relay as shown below the Elevator Controller will operate in a fail safe mode Fire, Complete Power Failure or Communications Loss if enabled will still allow access to the floors that are being controlled.

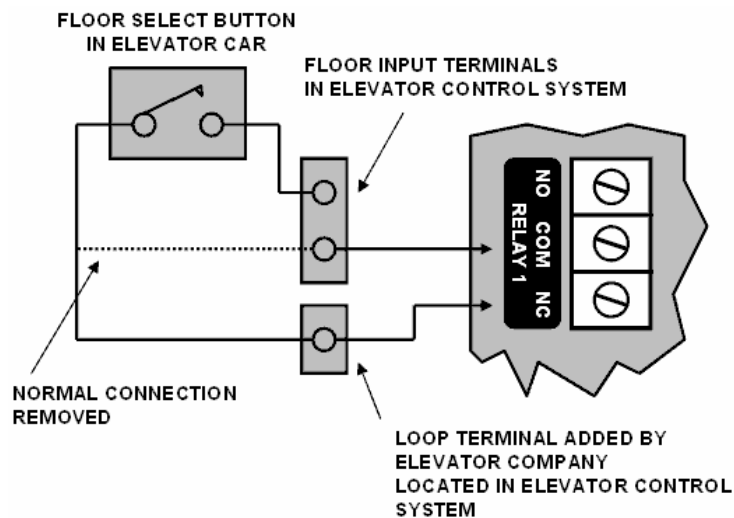


Figure 18 - Fail Safe Floor Relay Wiring

Connection is achieved by breaking the button input that comes from the elevator system and connecting either end to the COM and NC connection for the appropriate floor relay.

Although you can break either side of the button wiring and it will provide the same functionality it is recommended that the elevator company break the control signal and not the common for the button. This method will allow a very simple migration to the destination reporting option if required in the future.



UL Installations **MUST** be wired according to the fail safe method.

For fail safe wiring connection to operate correctly the relays must be inverted. This is selected by turning on the inverted relay configuration option in the reader expander configuration.

Fail Secure Wiring

The fail secure mode of operation is provided as a solution to provide a high level of security to installations that require NO access in the case of any failure. This is not recommended for use in modern installations.

The floor control relays must be wired using the NO and COM relay contacts as shown in the following diagram. This will only allow access to a floor if the relay is activated. Deactivation of the relay or complete power failure will PREVENT any access to the floor.

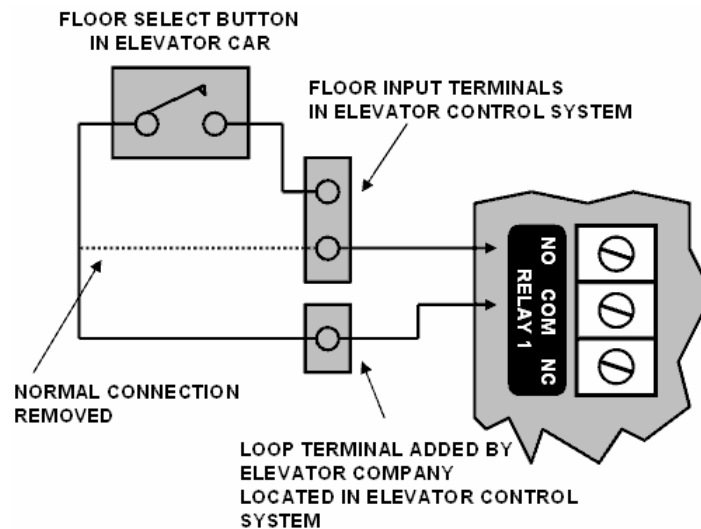


Figure 19 - Fail Secure Floor Relay Wiring



Correct operation of the Fire Control input will not occur if using the fail secure wiring connection.

Fail Safe Destination Reporting Wiring

Destination reporting will allow the monitoring of floor selection by the user. The difference between standard fail safe operation and destination reporting operation is that the relay is only deactivated (Invert Floor Control Relays Option Enabled in the Reader Expander Configuration) when a user selects a floor preventing more than one floor from being selected. The selected floor is also reported back to the control unit and logged as an event allowing a full audit of users floor selections to be recorded.

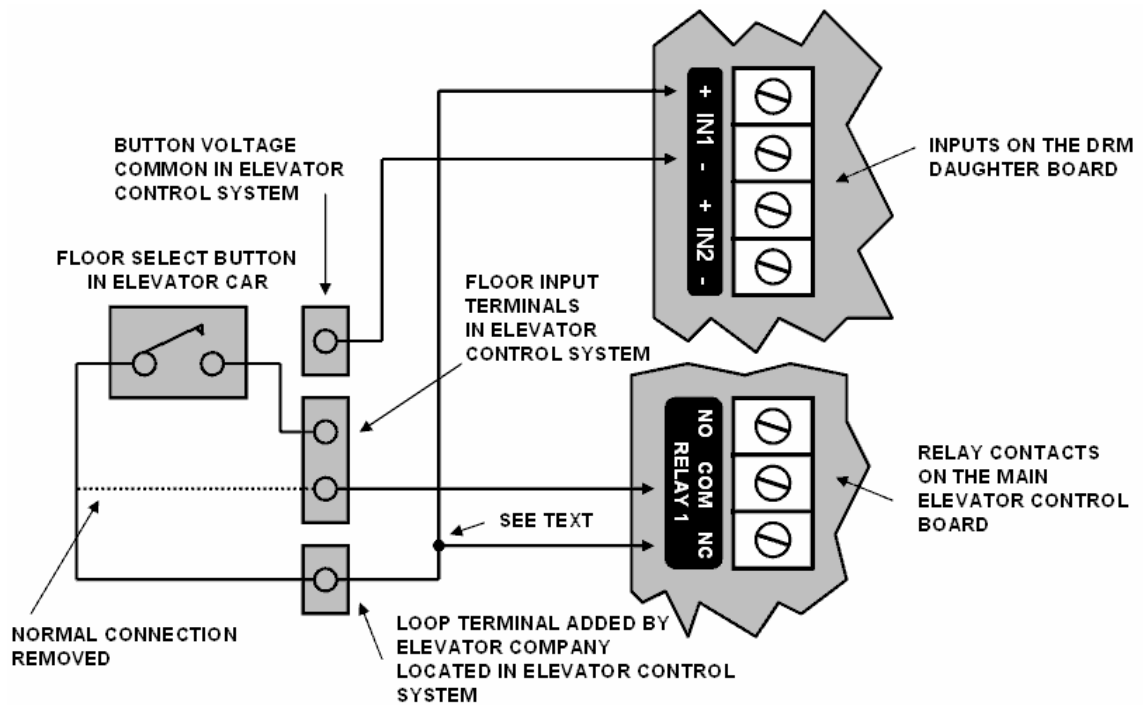


Figure 20 - Destination Reporting Fail Safe Wiring

As you can see in the above diagram the wiring is similar to standard fail safe wiring with the exception that an additional wire is required from the contacts of the relay to the input terminal on the PRT-PX16-DRI Destination Reporting Interface. A button voltage common wire is also required from the elevator control system. The button common voltage wire is typically looped to all the inputs. The diagram above shows a connection using a negative common. It is possible that the common may be positive and not negative.



It is important and is indicated by the "SEE TEXT" caption in the diagram that the active input to the PRT-PX16-DRI Destination Reporting Interface is linked from the side of the relay that is NOT switched.

All forms of Destination reporting require the addition of one PRT-PX16-DRI Destination Reporting Interface per Elevator Controller.

Fail Secure Destination Reporting Wiring

Destination reporting will allow the monitoring of floor selection by the user. The difference between normal fail secure operation and destination reporting operation is that the relay is only activated when a user selects a floor preventing more than one floor from being selected. The selected floor is also reported back to the control unit.

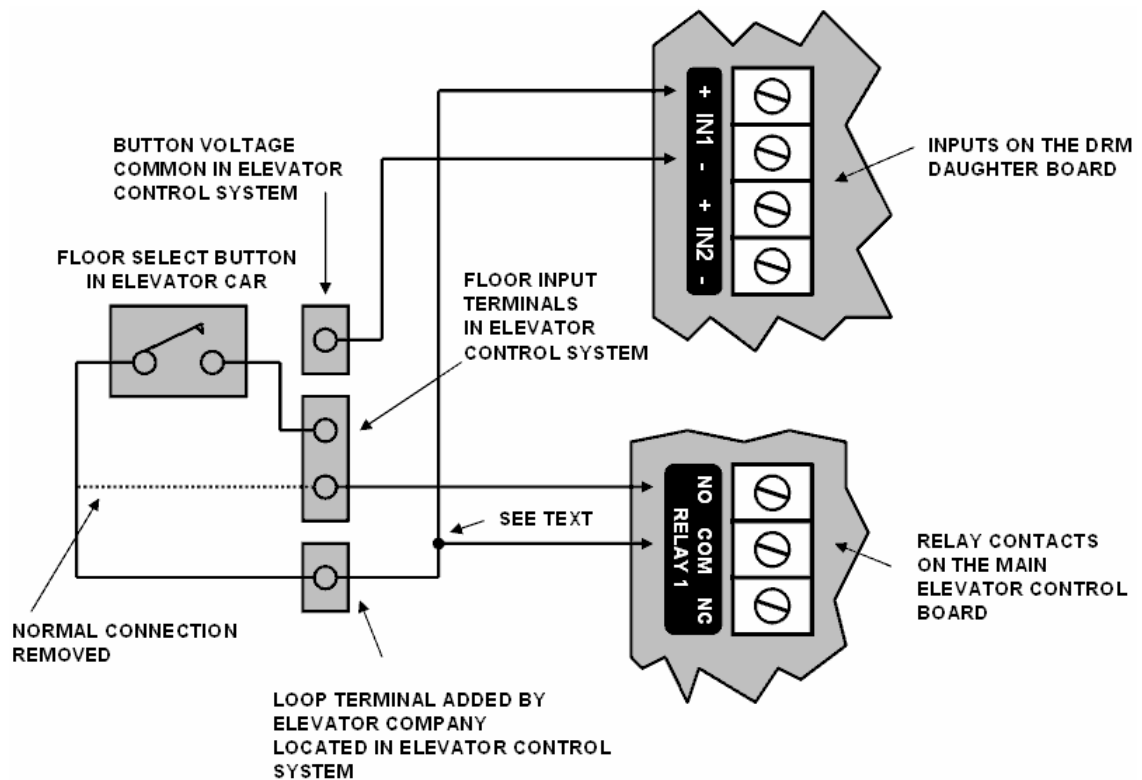


Figure 21 - Destination Reporting Fail Secure Wiring

As you can see in the above diagram the wiring is similar to standard fail secure wiring with the exception that an additional wire is required from the contacts of the relay to the input terminal on the PRT-PX16-DRI Destination Reporting Interface. A button voltage common wire is also required from the elevator control system. The button common voltage wire is typically looped to all the inputs. The diagram above shows a connection using a negative common. It is possible that the common may be positive and not negative.

! It is important and is indicated by the "SEE TEXT" caption in the diagram that the active input to the PRT-PX16-DRI Destination Reporting Interface is linked from the side of the relay that is NOT switched.

All forms of Destination reporting require the addition of one PRT-PX16-DRI Destination Reporting Interface per 16 PGM Output Expander.

Communication Failure Floor Operation

The Elevator Controller can be set to ensure that any communication failure will either prevent or allow access to the floors that it will control. It is recommended that this feature be enabled on the device by setting configuration option in the Reader Expander Configuration settings. Refer to the Protégé System Controller Reference Manual for more information.

! On complete power failure fail secure wiring will always result in NO ACCESS being obtained by any user regardless of the communication or configuration options.

Testing Destination Reporting Interface

Installations using the Protégé 16 PGM Output Expander and PRT-PX16-DRI Destination Reporting Interface can be complicated and must be planned carefully. It is recommended that you consult the Elevator Company well in advance before providing a solution to your client.

We also recommend that you configure and set up a unit with Destination Reporting enabled using the simple test circuit below. This will allow you to understand the principles and operation of the unit prior to the installation taking place.

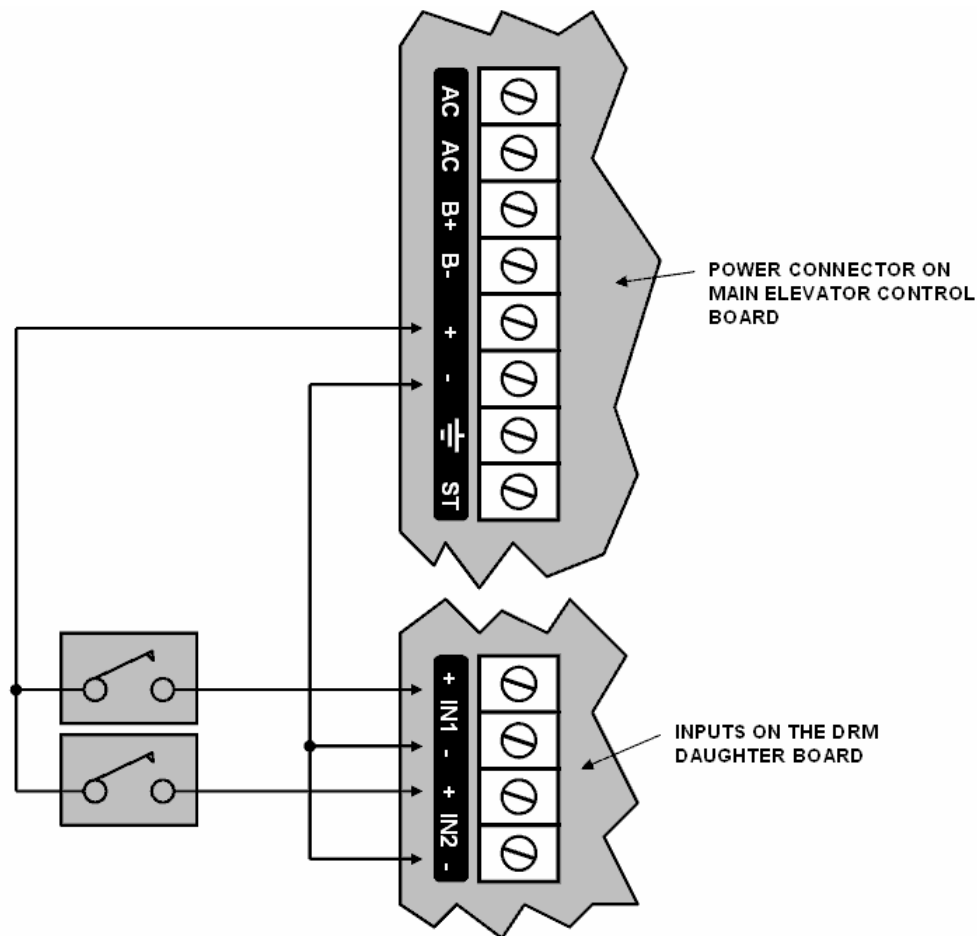


Figure 22 - Destination Reporting Testing Interface

As seen in the above diagram use two standard normally open switches and wire these to the Auxiliary output. Connect the common to the - of each input. Pressing the switch you should see the LED illuminate on the PRT-PX16-DRI Destination Reporting Interface corresponding to the input.



The LED indicators on the PRT-PX16-DRI Destination Reporting Interface board will illuminate regardless of the destination reporting mode that is configured in the Reader Expander settings.

CONFIGURATION SWITCH

Introduction

The addressing of the Protege PGM Expander allows up to 128 devices to be connected to the Protégé System Controller. The 'CONFIG' configuration DIP switch allows each PGM Expander to have a unique address.

Address Configuration

The switch positions 1 to 7 select the device address from 1 to 128. When setting an address the PGM expander must be powered down (Battery and AC) and restarted for the new address to take affect. When changing the address the PGM Expander will automatically default the internal configuration and require a network update. See the Protégé System reference manual for information on performing a module update.

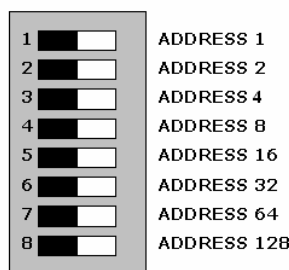


Figure 23 - Normal CONFIG Switch Functions

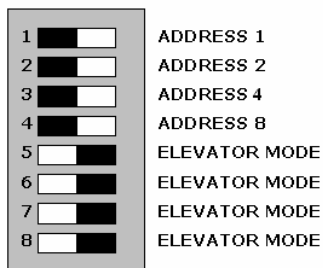


Figure 24 – Elevator Mode CONFIG Switch Functions

? If switch positions 5, 6, 7 and 8 are turned on and the 16 Output PGM Expander is restarted the PGM Expander will operate as an Elevator Floor Controller and will be able to be connected to a PRT-RDI2 or PRT-RDE2 Slave Communication Port. Refer to Elevator Floor Address Configuration on Page 24.

The device address is determined by adding the value of each switch that is selected in the ON position and then adding 1 to this value. In the example below the address 024 can be calculated using the following formula $(16+4+2+1) + 1 = 024$. Setting all address switches to OFF results in the default address of 001.



Figure 25 - PGM Expander Configured For Address 024

Elevator Floor Address Configuration

When the PRT-PX16 PGM Expander is operated in elevator floor control mode the switch positions 5,6,7 and 8 are turned on. The lower switch positions 1,2,3 and 4 select the address of the PGM Expander and the floors that it will control. Reader 1 floor 1 starts at address 1 and reader 2 floor 1 starts at address 9.

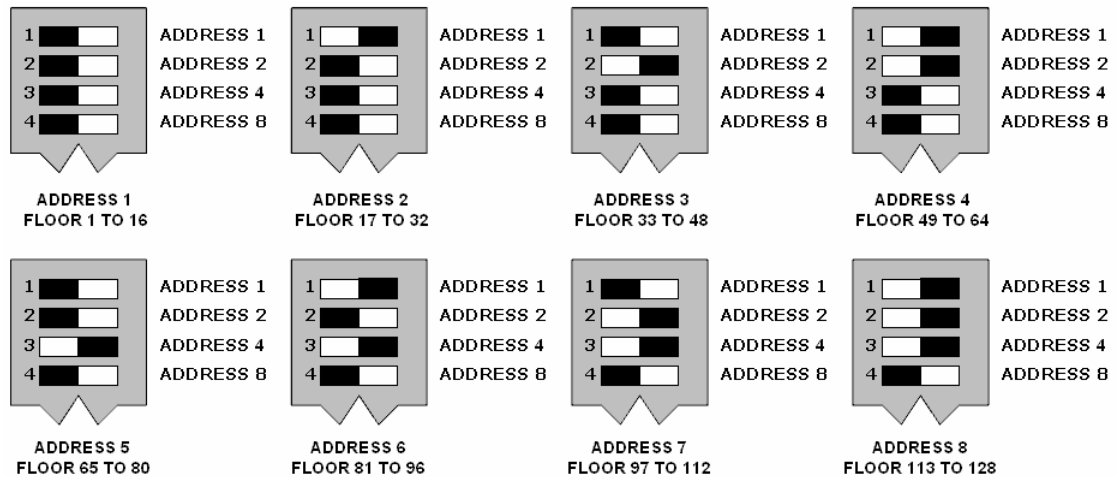


Figure 26 – Elevator Car 1 Floor Address Configuration

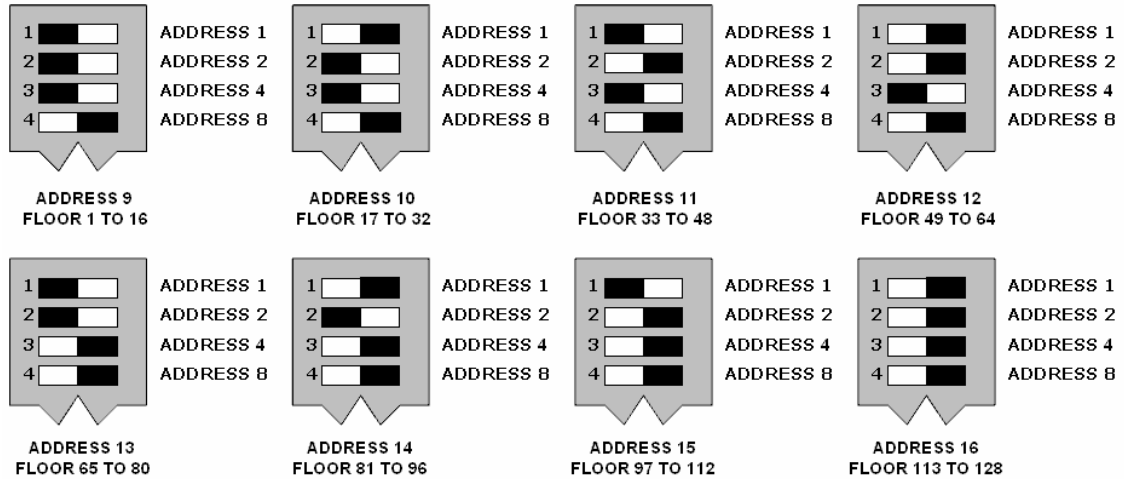


Figure 27 – Elevator Car 2 Floor Address Configuration



To allow the elevator floors to be added in multiples of eight floors each PGM Expander can be enabled in a split mode. This allows more flexible configuration. The split mode is a configuration setting under the reader expander settings in the Protégé System Management Suite and the keypad programming menus.

STATUS INDICATION

Introduction

The Protege PGM Expander includes extensive diagnostic indicators that can aid the installer in diagnostic faults and conditions. In some cases an indicator may have multiple meanings depending on the status indicator display at the time.

Status Indicator

The Status Indicator is located in the centre of the PCB and indicates the status of the Protégé PGM expander. If the Protege PGM Expander is operating normally the LED will indicate this by **FLASHING** at 1 second intervals. **FLASHING** rapidly at 250ms intervals indicates that the PGM Expander is attempting to register with the system controller, or that communication has failed and the PGM Expander is retrying the request.



When the fault indicator is **ON** the status indicator will show an error code. Refer to the section *Error Code Display* on page 28 for more information.

Fault Indicator

The fault indicator LED is identified by the text 'FAULT' and is located in the centre of the PCB. When the fault indicator is **FLASHING** the PGM Expander is operating in firmware update mode, or there is no firmware loaded. The fault indicator when **ON** indicates that an error has occurred while trying to register with the system controller. The status indicator will flash a number of times indicating an error code. Refer to the section *Error Code Display* on page 28 for more information.

Charge/Test Indicator

The charge and test indicator serves two functions; it will indicate that a Battery Test is in progress and that Battery Charging is being performed. When AC is present the battery charging current will be indicated by a varying **INTENSITY** level on this indicator. This indicator will be **ON** when a battery test is in progress by illuminating brightly for 30 seconds every 10 minutes.

This indicator is identified by the text 'CHARGE/TEST'. This indicator does not function when no AC is present. For more information refer to the *Battery Backup* section on page 9.

Auxiliary OK Indicator

Auxiliary voltage is supplied to the AUX+ outputs through the auxiliary fuse. If auxiliary supply is normal the 'AUX OK' indicator will be **ON**. If the auxiliary fuse is damaged the 'AUX OK' indicator will be **OFF**.

AC OK Indicator

When a valid AC input is provided to the Protégé System Controller the 'AC OK' indicator will be **ON**. When the AC is disconnected or has failed the 'AC OK' indicator is **OFF**.

5V Isolated Power Indicator

The PGM Expander communicates using an isolated RS-485 interface for optimal performance and this requires an isolated supply on the N+ and N- terminals. When a valid power supply is input the '5V ISO' indicator will be **ON** for the interface.

Relay Ok

Power to the relays onboard is controlled by the F+ and F- terminals and can be overridden by the FIRE OVERRIDE jumper. When power is supplied to the relays the 'RELAY OK' indicator will be **ON**.

Network RX/TX Indicator

The Network Receive and Transmit Data indicators are located on the top right side of the PCB beside the network communication interface. The indicator shows when the Protege PGM Expander is transmitting and receiving information from the module communications interface and is identified by the text 'RX' and 'TX'. When the indicator is **ON** data is being transmitted or received.

ERROR CODE INDICATION

Introduction

When the PGM Expander attempts to register or communicate with the system controller a registration error can be generated indicating that it was not successful.

Error Code Display

The following table is only valid if the FAULT indicator is **ON** and the STATUS indicator is **FLASHING**. If the fault indicator is **FLASHING** the PGM Expander requires a firmware update or is currently in firmware update mode.

The status indicator will **FLASH** with the error code number. The error code number is shown with a 250ms **ON** and **OFF** period (duty cycle) with a delay of 1.5 seconds between each display cycle.

STATUS FLASHING	ERROR DESCRIPTION
1	Unknown Error Code <i>The error code returned by the system controller could not be understood by the PGM Output Expander. Contact Integrated Control Technology.</i>
2	Firmware Version <i>The firmware version on the PGM Output Expander is not compatible with the system controller. To clear this error, update the module using the LoadIT module update application.</i>
3	Address Too High <i>The PGM Output Expander address is above the maximum number of PGM Output Expanders available on the system controller. To clear this error change the address to one within the range set on the system controller, restart the PGM Output Expander by disconnecting the power.</i>
4	Address In Use <i>The Address is already in use by another PGM Output Expander. To clear this error set the address to one that is currently not occupied by a PGM Output Expander. Use the view network status command to list the attached devices, or the network update command to refresh the registered device list.</i>
5	Controller Secured Registration Not Allowed <i>Controller is not accepting any module registrations. To allow module registrations use the network secure command to change the secure setting to not secured.</i>
6	Serial Number Fault <i>The serial number in the device is not valid. Return the unit to the distributor for replacement.</i>
7	Locked Device <i>The PGM Output Expander or system controller is a locked device and can not communicate on the network. Return the unit to the distributor for replacement.</i>

ORDERING INFORMATION

Product Codes

Please use the following product codes when placing an order for the Protege PGM Expander.

PRT-PX16-PCB	Protégé 16 PGM Output Expander (PCB Only)
<i>Includes</i>	<i>Accessory Bag</i>

Manuals and literature are available at the Integrated Control Technology website in the documentation section. If you require manuals on CD-ROM please request a literature CD-ROM from the website.

DISCLAIMER

Introduction

Controlling elevator systems requires the interface of high voltage and electrical signals that relate to life safety. Please read the following disclaimer notice prior to completing any wiring on the PRT-PX16 16 PGM Output Expander when operating in Elevator Control mode. If you are not sure about any portion of the interface to the elevator system ask a qualified elevator engineer.

Disclaimer Notice

It is very important that a trained and registered elevator service company connect wiring associated with any component of the elevator system. This includes the wiring of the Elevator Controller's floor control relay terminals. Under no circumstances does Integrated Control Technology or any associated company accept any liability for the improper installation or commissioning of any Elevator Controller or associated products.

It is the responsibility of the installation company and the elevator company to ensure the personal safety of occupants using the elevator. We recommend that all installations of the Elevator Controller use the fire control input and is correctly wired to the fire control switch in the elevator controller as well as the floor control relays being wired in the fail safe mode. This ensures operation of the elevator floor access in trouble, complete failure or emergency situations.

WARRANTY

Introduction

The Protege 16 PGM Output Expander is covered under the Integrated Control Technology standard terms and warranty agreement. This document can be downloaded from the Integrated Control Technology web site or obtained by return fax.

Contact

Integrated Control Technology welcomes all feedback. Please visit our website or use the information below.

Integrated Control Technology

P.O. Box 302-340
North Harbour Post Centre
Auckland
New Zealand

Unit C,
6 Ascension Place
Mairangi Bay
Auckland
New Zealand

Phone: +64-9-476-7124

Fax: +64-9-476-7128

www.integratedcontroltechnology.com

NOTES

[illegible]



Unit C, 6 Ascension Place, Mairangi Bay, P.O. Box 302-340
North Harbour, Auckland, New Zealand.
Phone: +64 (9) 476 7124 • Fax: +64 (9) 476 7128
www.integratedcontroltechnology.com